

c) REMARKS

The claims are 1, 3-6, 9-13 and 27, with claims 1 and 11-13 being independent. Claims 1 and 11-13 have been amended to better define the intended invention. Reconsideration of the claims is expressly requested.

Claims 1 and 11-13 have been amended to clarify that the auxiliary electrode is separate from the substrate (and substrate holder) and therefore cannot be read as being the substrate. Support for this amendment is found, inter alia, in Figs. 1 and 6 and on page 19, lines 5-23 and page 26, lines 4-12. In Figs. 1 and 6, the auxiliary electrode 110 is separate from the substrate 102 and substrate holder 103, see page 19, lines 6-8, i.e.,auxiliary electrode is arranged between a substrate and discharge electrode (emphasis supplied) and Fig. 6 in which the auxiliary electrode and substrate are separately identified.

Claims 1, 3-6, 11-13 and 27 were rejected under 35 U.S.C. 103(a) as being unpatentable over Burger et al., WO 98/58100 (or its counterpart, U.S. 6,372,303) (Burger '303). Claims 9 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Burger and further in view of Raoux et al., U.S. 6,162,709 (Raoux '709). Applicants respectfully traverse these rejections.

The Examiner argues that the instant substrate holder can read to be the auxiliary electrode and that the substrate can be read as being an auxiliary electrode. Without agreeing, Applicants have amended the claims to clarify that the auxiliary electrode is separate from the substrate (and substrate holder). As shown in Fig. 1, substrate 102 is grounded, while auxiliary electrode 110 is connected to a signal generator 112 and power amplifier 111.

The Examiner admits that Burger does not teach the maximum amplitude of the bias voltage. The Examiner, however, argues that a cause and effect relationship exists between the magnitude of the voltage and the hardness of the deposited layer and further alleges that it would have been obvious to one of ordinary skill in the art to use voltages that gave the desired hardness of the deposited layer. Burger does not teach or suggest that a maximum amplitude of the bias voltage exceeding 80 V may cause discharge (see page 11, lines 22-25, in the specification). In addition, Applicants have demonstrated that it is possible to control the quantity of hydrogen radical without changing the quantity of SiH radical by using the deposited-film formation method of Example 2 when the voltage amplitude is set to 80 V or less (see Figure 1; see also page 22, lines 11-24 of the specification).

Burger is also said to teach a substrate holder, which can act as an auxiliary electrode by producing a substrate bias, and which is supplied with a frequency that allegedly overlaps Applicants' claimed range. However, the present claims preclude an auxiliary electrode which is the substrate. Further, Burger's frequency range is from 0.1 KHz to 10 MHz, preferably 1-100 KHz. Accordingly, Burger tends to teach away from the present claimed range. The lower limit for the frequency of the voltage applied to the instant auxiliary electrode is at least 1 MHz to prevent inducing unnecessary movement of ions (see page 15, lines 24-25, in the specification). To the contrary Burger prefers a frequency of 1-100 KHz, which is less by a factor of 1000 than Applicants' lower limit.

With regard to claim 6 the Examiner also acknowledges that Burger teaches but a single electrode (11) that acts as a substrate holder for multiple substrates. The

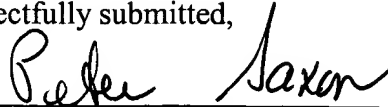
Examiner cites *In re Harza*, 124 USPQ 8, 11 (1977) to argue that using a plurality of bearing devices 11 is a mere duplication of parts because one skilled in the art would recognize the equivalence of multiple electrodes each holding a single substrate. However, the court in *In re Harza* held that a duplication of parts has no patentable significance unless a new and unexpected result is produced (emphasis added). See also MPEP §2144.04 (C).

The present invention discloses in Table 2 (page 28 of the specification) that arranging a plurality of auxiliary electrodes at least in the flow direction of a raw material gas unexpectedly results in the uniformity of characteristics of a deposited film in the gas flow direction without causing the degradation of film quality in the entire surface of the deposited-film while maintaining a high rate of film formation (see page 26, line 23 to page 27, line 5 and page 14, lines 13-18, in the specification). The Examiner argues “that the artisan would expect” unexpected results since multiple electrodes would allegedly provide more uniformity than one electrode. One cannot, as a matter of law, expect “unexpected results”. One can only expect “expected results”. Adding an auxiliary electrode raises conversion efficiency and film formation rates upwards of 25% and 10%, respectively, without degrading film quality. Nothing suggests adding the auxiliary electrode will achieve this result. The results are, therefore, unexpected and surprising.

Accordingly, Applicants submit that none of the references, whether considered alone or combined, discloses or suggests the present claimed invention nor renders it unpatentable. It is respectfully requested that the claims be allowed and that the case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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